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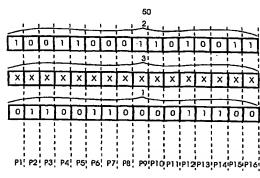
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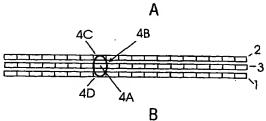
- (74) Agent: DEGUELLE, Wilhelmus, H., G.; Philips Intellectual Property & Standards, Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL).
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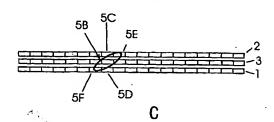
[Continued on next page]

(54) Title: METHOD FOR CROSSTALK REDUCTION BETWEEN TRACKS ON A RECORDING MEDIUM, RECORDING DEVICE, PLAYBACK DEVICE AND RECORDING MEDIUM



(57) Abstract: In order to reduce the cross talk between data recorded in adjacent tracks on a record carrier the encoding of the data stream into code words is controlled using control points. The code words in a first track are altered by selecting that value of the control point that results in code words that differ in as many bit positions as possible from the corresponding bit positions in a second track, where the first track and second track are both adjacent to the same third track. Having opposite bit values in corresponding bit positions on the first and second track results in the lowest contribution of these bit positions to the code words stored in the third track.







Declaration under Rule 4.17:

as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK,

EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)

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INTERNATIONAL SEARCH REPORT

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According to International Patent Classification (IPC) or to both national classification and IPC										
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C. DOCUMI	ENTS CONSIDERED TO BE RELEVANT									
Category °	Citation of document, with indication, where appropriate, of the rela	ovant passages		Relevant to claim No.						
A	US 5 604 725 A (FUJI HIROSHI) 18 February 1997 (1997-02-18) the whole document			1,10-13						
A	SCHOUHAMER IMMINK K A: "EFMPLUS: CODING FORMAT OF THE MULTIMEDIA CODISC" IEEE TRANSACTIONS ON CONSUMER ELE IEEE INC. NEW YORK, US, vol. 41, no. 3, 1 August 1995 (1995-08-01), pages XP000539497 ISSN: 0098-3063 page 494, right-hand column, last paragraph - page 495, left-hand column and column an	COMPACT COMPAC		1,10-13						
X Furt	ther documents are listed in the continuation of box C.	χ Patent family	members are listed	in annex.						
"A" docum consid "E" earlier filling o "L" docum which citatio "O" docum other "P" docum later t	ent which may throw doubts on priority claim(s) or is cited to establish the publication date of another on or other special reason (as specified) ent referring to an oral disclosure, use, exhibition or means ent published prior to the International filing date but han the priority date claimed	To later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention. "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone. "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art. "&" document member of the same patent family								
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INTERNATIONAL SEARCH REPORT

in tional Application No PCT/IB 03/05833

	ation) DOCUMENTS CONSIDERED TO BE RELEVANT	Dolouged to state his
Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to dalm No.
Ą	EP 0 822 555 A (MATSUSHITA ELECTRIC IND CO LTD) 4 February 1998 (1998-02-04) claim 1; figure 1	1,10-13
A	EP 0 892 395 A (HEWLETT PACKARD CO) 20 January 1999 (1999-01-20) column 5, line 41 - column 6, line 2; figures 3-5 column 4, line 15 - column 5, line 12	1,10-13
A	EP 1 244 105 A (FUJITSU LTD) 25 September 2002 (2002-09-25) claims 1-3; figures 6,8	1,10-13
A	HONDA N ET AL: "Inter-track orthogonal coding for ultra high track density recording" IEEE TRANS. MAGN. (USA), IEEE TRANSACTIONS ON MAGNETICS, NOV. 1995, USA, vol. 31, no. 6, pt.1, November 1995 (1995-11), pages 3099-3101, XP002281365 ISSN: 0018-9464 the whole document	1,10-13
P,A	WO 03/085667 A (KAHLMAN JOSEPHUS A H M; KONINKL PHILIPS ELECTRONICS NV (NL)) 16 October 2003 (2003-10-16) cited in the application the whole document	1,10-13
P,A	US 2003/048728 A1 (YANAGISAWA TAKUMA ET AL) 13 March 2003 (2003-03-13) paragraph '0111! - paragraph '0136!; figures 10-16	1,10-13

1



INTERNATIONAL SEARCH REPORT

in ional Application No PCT/IB 03/05833

Patent document cited in search report		Publication Patent family member(s)			Publication date	
US 5604725	A	18-02-1997	JP	3499940	B2	23-02-2004
			JP	7225951	Α	22-08-1995
			JP	2003338054	Α	28-11-2003
EP 0822555	A	04-02-1998	CN	1380652	A	20-11-2002
			CN	1183609	A,B	03-06-1998
			EP	1335370	A1	13-08-2003
			EP	1335371	A1	13-08-2003
			EP	1335372	A1	13-08-2003
			EP	1335373	A1	13-08-2003
			EP	0822555	A2	04-02-1998
			JP	10144007	Α	29-05-1998
			บร	5898394	A	27-04-1999
EP 0892395	A	20-01-1999	US	6091698	Â	18-07-2000
			DE	69809647	D1	09-01-2003
			DE	69809647	T2	14-08-2003
			EP	0892395	A2	20-01-1999
			JP	11086288	A	30-03-1999
EP 1244105	Α	25-09-2002	JP	2002342938	Α	29-11-2002
			ΕP	1244105	A2	25-09-2002
			US	2002131351	A1	19-09-2002
WO 03085667	A	16-10-2003	MO	03085667	A1	16-10-2003
US 200304872	8 A1	13-03-2003	JP	2003085890	A	20-03-2003